

1. In a nozzle for a jet engine having an existing first stage mixer which includes a number of first stage lobes, the improvement comprising a second stage mixer adapted for engagement to the first stage mixer, said second stage mixer having a plurality of substantially identical second stage mixer lobes which equal in number those of the first stage lobes;

said second stage mixer lobes increasing in height from a circular configuration adjacent to the first stage mixer, to an undulating configuration defining a terminus area of said second stage mixer; and

means to adjust individual lobe dimensions and thereby adjust the total area of said terminus area.

2. The improvement according to claim 1 wherein said area of said terminus area is adjustable while said second stage mixer is coupled to said first stage mixer.

3. The improvement according to claim 1 wherein said means to adjust individual lobe dimensions and thereby adjust the total area of said terminus area comprises:

each said second stage mixer lobe having a substantially curved shape defined by two communicating sides curving around a center axis; and

means to translate said two sides away from said center axis and thereby alter lobe dimension and said area of said terminus area.

4. The improvement according to claim 1 further comprising:

each of said mixer lobes configured on their interior surfaces to force impinging hot gases from the jet engine towards the interior of said second stage mixer and communication from said terminus area;

each of said mixer lobes configured on their exterior surfaces to mix with ambient cooling air to form gas cores which are smaller than those formed by the first stage mixer and to break smaller gas cores into innumerable forms which are both cooler and noise attenuated;

said smaller gas cores communicated by said exterior surface of said lobes to exit apertures adjacent to said terminus area; and

means to adjust the total area of said exit apertures.

5. The improvement according to claim 2 further comprising:

each of said mixer lobes configured on their interior surfaces to force impinging hot gases from the jet engine towards the interior of said second stage mixer and communication from said terminus area;

each of said mixer lobes configured on their exterior surfaces to mix with ambient cooling air to form gas cores which are smaller than those formed by the first stage mixer and to break smaller gas cores into innumerable forms which are both cooler and noise attenuated;

said smaller gas cores communicated by said exterior surface of said lobes to exit apertures adjacent to said terminus area; and

means to adjust the total area of said exit apertures.

6. The improvement according to claim 3 further comprising:

each of said mixer lobes configured on their interior surfaces to force impinging hot gases from the jet engine towards the interior of said second stage mixer and communication from said terminus area;

each of said mixer lobes configured on their exterior surfaces to mix with ambient cooling air to form gas cores which are smaller than those formed by the first stage mixer and to break smaller gas cores into innumerable forms which are both cooler and noise attenuated;

said smaller gas cores communicated by said exterior surface of said lobes to exit apertures adjacent to said terminus area; and

means to adjust the total area of said exit apertures.

7. The improvement according to claim 4 wherein adjustment of said means to adjust individual lobe dimensions and thereby adjust the total area of said terminus area concurrently provides an opposite total size adjustment of said exit apertures thereby providing said means to adjust the total area of said exit apertures.

8. The improvement according to claim 6 wherein adjustment of said means to adjust individual lobe dimensions and thereby adjust the total area of said terminus area concurrently provides an opposite total size adjustment of said exit apertures thereby providing said means to adjust the total area of said exit apertures.

9. The improvement according to claim 6 wherein adjustment of said means to adjust individual lobe dimensions and thereby adjust the total area of said terminus area concurrently provides an opposite total size adjustment of said exit apertures thereby providing said means to adjust the total area of said exit apertures.

10. The improvement according to claim 1 wherein said means to adjust individual lobe dimensions and thereby adjust the total area of said terminus area comprises:

a rod spacer assembly having a first end engaged with a second end;

second stage mixer lobes defined by a first wall intersecting a second wall;

said first end adapted for cooperative engagement with said first wall and said second end adapted for cooperative engagement with said second end; and

means to laterally translate said first end of said rod spacer toward or away from said second end.

11. The improvement according to claim 2 wherein said means to adjust individual lobe dimensions and thereby adjust the total area of said terminus area comprises:

a rod spacer assembly having a first end engaged with a second end;

second stage mixer lobes defined by a first wall intersecting a second wall;

said first end adapted for cooperative engagement with said first wall and said second end adapted for cooperative engagement with said second end;

means to laterally translate said first end of said rod spacer toward or away from said second end.

12. The improvement according to claim 3 wherein said means to adjust individual lobe dimensions and thereby adjust the total area of said terminus area comprises:

a rod spacer assembly having a first end engaged with a second end;

said first end adapted for cooperative engagement with one of said two sides and said second end adapted for cooperative engagement with the other of said two sides; and

means to laterally translate said first end of said rod spacer toward or away from said second end.

13. The improvement according to claim 1 additionally comprising:

means to tensionally encircle said second stage mixer adjacent to said terminus area.

14. The improvement according to claim 2 additionally comprising:

means to tensionally encircle said second stage mixer adjacent to said terminus area.

15. The improvement according to claim 3 additionally comprising:
means to tensionally encircle said second stage mixer adjacent
to said terminus area.

16. The improvement according to claim 10 additionally comprising:
means to tensionally encircle said second stage mixer adjacent

17. The improvement according to claim 11 additionally comprising:
means to tensionally encircle said second stage mixer adjacent

18. The improvement according to claim 12 additionally comprising:
means to tensionally encircle said second stage mixer adjacent

19. A method of employing rod spacer assemblies having a first end
engaged with a second end and having a means to laterally translate
said first end of said rod spacer toward or away from said second
end, to thereby adjust the total terminus area of a second stage
mixer adapted for engagement at first end to the first stage mixer
of a jet engine and having at a second end having a plurality of
substantially identical second stage mixer lobes formed by two
communicating walls which define said total terminus area,
comprising the steps of:

adapting said two communicating walls of each of said mixer
lobes for engagement with said rod spacer assembly,

engaging said first end and said second end of one of said rod
spacer assemblies with each of said respective two communicating
walls of each of said mixer lobes; and

employing said means to translate said first end of said rod spacer toward or away from said second end, to alter the dimensional characteristics of each of said mixer lobes.

20. The method of claim 19 comprising the additional steps of:

tensioning a band around said second stage mixer adjacent to said terminus area after all of said mixer lobes have had their dimensional characteristics adjusted.